

## **ABSTRACT OF THE DISCLOSURE**

A high density multi-layer microcoil includes a substrate, a multi-layer coil winding, a magnetic core and a dry film photoresist structure. The multi-layer coil winding and the magnetic core are supported by the dry film photoresist structure. The fabrication process is using photolithography process to form a dry film photoresist structure with a coil tunnel having coil elements perpendicular to the substrate and two outlets at ends of the tunnel; and injecting a conductive material with a low melting point into the tunnel and forming the coil winding.